

Applicants: Young-Wook KIM et al.
Serial No.: 10/670,040
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Amendments to the Claims:

Please amend claims 1-2 and 4 and cancel claims 3, 5, 7-8, 11, and 13-14:

1. (Currently Amended) A method for fabricating a highly porous ceramic which has a high porosity of not less than 60% and a pore density of not less than 10^9 pores/cm³ from expandable microspheres and a preceramic polymer, comprising the steps of:

homogeneously mixing a preceramic polymer powder in an amount of 20% by weight or more, based on the total weight of the starting materials, expandable hollow microspheres in an amount of 20% by weight or more, based on the total weight of the starting materials and a ceramic powder in an amount of 50% by weight or less, based on the total weight of the starting materials, and molding the mixture to form a molded body;

heating the molded body to expand ~~it~~ the molded body and the expandable hollow microspheres at a temperature of 110~200°C, the temperature range between the softening point and melting point of the preceramic polymer;

curing the expanded molded body; and
pyrolyzing the cured molded body.

2. (Currently Amended) The method for fabricating a highly porous ceramic from expandable microspheres and a preceramic polymer according to claim 1, wherein the ceramic powder is at least one material selected from the group consisting of Al_2O_3 , ZrO_2 , MgO , SiC , TiC , Si_3N_4 , AlN , TiN , MoSi_2 , WC and mixtures thereof.

3. (Canceled)

4. (Currently Amended)) A method for fabricating a highly porous ceramic which has a high porosity of not less than 60% and a pore density of not less than 10^9 pores/cm³ from expandable microspheres and a preceramic polymer, comprising the steps of:

homogeneously mixing a preceramic polymer powder in an amount of 20% by weight or more, based on the total weight of the starting materials and expandable hollow microspheres in an amount of 20% or more, based on the total weight of the starting materials, and molding the mixture to form a molded body;

heating the molded body to expand ~~it~~ the molded body and the expandable hollow microspheres at a temperature of 110~200°C, the temperature range between the softening point and melting point of the preceramic polymer;

curing the expanded molded body; and
pyrolyzing the cured molded body.

5. (Canceled)

6. (Previously Presented) The method for fabricating a highly porous ceramic from expandable microspheres and a preceramic polymer according to claim 1, wherein the preceramic polymer is at least one polymer selected from the group consisting of polycarbosilane, polysiloxane, polysilazane and mixtures thereof.

7. (Canceled)

8. (Canceled)

9. (Previously Presented) The method for fabricating a highly porous ceramic from expandable microspheres and a preceramic polymer according to claim 1, wherein upon heating the expandable hollow microspheres to 110~200°C at atmospheric pressure, the shell is softened and the inner medium is expanded to form spherical hollow spheres having an average diameter of 10-200 μm .

10. (Withdrawn) A highly porous ceramic fabricated from expandable microspheres and a preceramic polymer, in accordance with the method according to claim 1 wherein the highly porous ceramic has a high porosity of not less than 60% and a pore density of not less than 10^8 pores/ cm^3 .

11. (Canceled)

12. (Previously Presented) The method for fabricating a highly porous ceramic from expandable microspheres and a preceramic polymer according to claim 4, wherein the preceramic polymer is at least one polymer selected from the group consisting of polycarbosilane, polysiloxane, polysilazane and mixtures thereof.

13. (Canceled)

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14. (Canceled)

15. (Previously Presented) The method for fabricating a highly porous ceramic from expandable microspheres and a preceramic polymer according to claim 4, wherein upon heating the expandable hollow microspheres to 110~200°C at atmospheric pressure, the shell is softened and the inner medium is expanded to form spherical hollow spheres having an average diameter of 10-200 μm .

16. (Withdrawn) A highly porous ceramic fabricated from expandable microspheres and a preceramic polymer, in accordance with the method according to claim 4 wherein the highly porous ceramic has a high porosity of not less than 60% and a pore density of not less than 10^8 pores/cm³.